

What is claimed is:

Sub B2
1. A device for analyzing a plurality of sample components, comprising:
a drawn substrate having a length, the drawn substrate having at least two drawn
channels formed therein;

5 the drawn channels extending in a direction parallel to the length, and inlets and
outlets in cooperating relation with the drawn channels .

2. A method of analyzing by introducing a plurality of sample components to a
drawn substrate having a length, the drawn substrate having at least two drawn channels
10 formed therein;

the drawn channels extending in a direction parallel to the length, and the substrate
includes inlets and outlets disposed in cooperating relation with the drawn channels .

Sub
D2
15 3. A device for analyzing a plurality of sample components, comprising:
a drawn substrate having a length, the drawn substrate having at least two drawn
channels formed therein;

the drawn channels extending in a direction parallel to the length; and

at least one endcap substrate having at least one endcap channel, the at least one
endcap channel being in fluid communication with at least one channel selected from the
20 group comprising: a selected one of the drawn channels, a plurality of the drawn channels,
another endcap channel and combinations thereof.

4. A device as in claim 1 or 3 with at least one drawn channel having a cross
sectional area in the range of 0.0001mm^2 to 1mm^2 , preferably 0.0025mm^2 to 0.25mm^2 , and
25 most preferably 0.005mm^2 to 0.0075mm^2 .

A 2
sub B 2
5

5. A device as in claim 1 or 3 with at least one drawn channel having a length in the range of 1mm to 1km, preferably 3mm to 1000mm, and most preferably 10mm to 250mm.

6. A micro electro mechanical system utilizing a device as in claim 1 or 3.

7. A lab on a chip system utilizing a device as in claim 1 or 3.

10 8. A device as in claim 1 or 3, wherein the drawn substrate is formed using a drawing process in which one or more of draw rate, draw tensions, draw temperature, and draw pressure are varied such that a cross sectional area of each channel varies along the length.

15 9. A device as in claim 1 or 3, wherein the drawn channels further comprise a plurality of ports providing fluidic communication with the drawn channels.

20 10. A device as in claim 1 or 3, further comprising machined structures disposed within the substrate in cooperating relation with the drawn channels.

11. A device as in claim 1 or 3 wherein the drawn substrate further comprises an optical waveguide formed therein and extending in the direction parallel to the length.

25 12. A device as in claim 1 or 3 wherein the drawn substrate further comprises an electrical conductor extending in the direction parallel to the length.

sub B2
13. A device as in claim 1 or 3 wherein the drawn substrate further comprises at least one optical isolator extending in the direction parallel to the length.

14. A device as in claim 1, wherein a first one of the at least two drawn channels
5 has a cross-sectional geometry different from a cross-sectional geometry of a second one of the at least two drawn channels.

15. A device as in claim 1 wherein the drawn substrate comprises a material selected from the group comprising: glass, ceramic, and thermoplastic polymers.
10

16. A device as in claim 1 wherein the drawn substrate comprises a material selected from the group comprising: fused silica, fused quartz, and PMMA.

17. A device as in claim 1, further comprising an exterior coating on the drawn
15 substrate comprising a material selected from the group comprising: polyimide, acrylate, fluorinated acrylate, silicone, metal, optical cladding.

18. A device as in claim 1, further comprising an exterior coating on the drawn
20 substrate comprising a material selected from the group which is: magnetic, radio opaque, optically filtering, conductive, dielectric.

19. A device as in claim 1, further comprising an interior coating on the drawn
channel comprising a material selected from the group comprising: hydrophobic bonded
phases, hydrophylic bonded phases, polyacrylamides, silver, silver halide, gold, and
25 polytetrafluoroethylene.

Sub
B2

20. A device as in claim 1, wherein at least a selected one of the at least two drawn channels has at least a portion of a wall comprising a lens.

5 21. A device as in claim 1, wherein at least a selected one of the at least two drawn channels has at least a portion of a wall comprising a reflector.

22. A device as in claim 1, wherein the drawn substrate has at least one alignment groove on its exterior surface, down its length.

10 23. A device as in claim 1, further comprising an optical fiber interfaced into one of the drawn channels.

15 24. A device as in claim 23, further comprising a structure for redirecting light in the drawn channel interfaced with the optical fiber.

25. A device as in claim 24, wherein the structure for redirecting light comprises a reflecting surface located on the end of the optical fiber interfaced into the drawn channel.

20 26. A device as in claim 20, wherein the at least two drawn channels have a substantially constant spacing therebetween, a substantially constant relative rotational alignment and a substantially constant relative angular alignment along the length of the substrate.

Sub B2

27. A device as in claim 26, wherein two of the drawn channels have a portion of a wall comprising a lens and the two lenses have a substantially constant spacing therebetween, a substantially constant relative rotational alignment and a substantially constant relative angular alignment along the length of the substrate.

5

28. A device as in claim 3, wherein the endcap substrate is a drawn substrate and the endcap channels are drawn endcap channels.

10

29. A device as in claim 28, wherein the drawn endcap channels are formed using a drawing process in which one or more of draw rate, draw tension, draw temperature and draw pressure are varied such that a cross sectional area of each channel varies along a length thereof.

15

30. A device as in claim 3, wherein the endcap substrate further comprises an endcap channel having a cross-sectional geometry different from a cross-sectional geometry of the at least one endcap channel.

20

31. A device as in claim 3, wherein the endcap substrate comprises a material selected from the group comprising: glass, ceramic, and thermoplastic polymers.

32. A device as in claim 3, wherein the endcap substrate comprises a material selected from the group comprising: fused silica, fused quartz, and PMMA.

25

33. A device as in claim 3, wherein the at least one endcap channel has at least a portion of a wall comprising a lens.

34. A device as in claim 3, wherein the at least one endcap channel has at least a portion of a wall comprising a reflector.

35. A device as in claim 3, wherein the drawn endcap has at least one alignment groove on its exterior surface.

36. A device as in claim 3, wherein another endcap channel and at least one said endcap channel have a substantially constant spacing therebetween, a substantially constant relative rotational alignment and a substantially constant relative angular alignment along the length of the substrate.

37. A drawn substrate manufactured by a process comprising:
providing a preform body having at least one channel and at least one optical waveguide preform therein and extending along a length of the preform body;
drawing the preform body to extend the length thereof such that a length of the at least one channel is extended while substantially maintaining a cross sectional geometry of the at least one channel and such that a length of the at least one optical waveguide preform is extended while substantially maintaining a cross sectional geometry of the at least one optical waveguide preform; and
cutting the drawn preform body to a desired length.

add
A3